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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/547,444

02/09/2007

Peter Miethe

23374

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08/04/2010

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EXAMINER

DO, PENSEE T

ART UNIT

PAPER NUMBER

1641

NOTIFICATION DATE

DELIVERY MODE

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ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/547,444	<b>Applicant(s)</b> MIETHE ET AL.	
	<b>Examiner</b> Pensee T. Do	<b>Art Unit</b> 1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 18-27 is/are pending in the application.
- 4a) Of the above claim(s) 1-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-16 and 18-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-16 and 18-27 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/29/07; 8/26/2005</u> .                                     | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Priority***

This application 10547444, PG Pub. No. 20070155024 filed 02/09/2007 is a national stage entry of PCT/DE04/00149, International Filing Date: 01/30/2004 and claims foreign priority to 10309132.7 , filed 02/28/2003.

### ***Election/Restrictions***

Applicant's election of group II, claims 12-16, 18-27 in the reply filed on April 13, 2010 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Information Disclosure Statement***

The IDS submitted on November 29, 2007 and August 26, 2005 have been acknowledged and considered.

### ***Claims Status***

Claims 1-16, 18-27 are pending.

Claim 17 is cancelled in the amendment filed on April 13, 2010.

Claims 12-16, 18-27 are being examined.

All other claims are withdrawn from further consideration.

### ***Claim Objections***

Claim 20 is objected to because of the following informalities: claim 20 depends from a non-elected claim 1. Appropriate correction is required. For the purpose of examination, claim 20 is treated as if it depends from claim 19.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 15 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 15 and 16 recites "l" , "m", "n" which are unclear of what "l", "m", "n" represent or how the positive whole numbers and the "l", "m", "n" are related.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Simmonds et al. (US 6,597,176 filed on July 23, 2001) in view of Kang et al. (US PG Pub. no. 2003/0210040) filed October 11, 2002).

Simmonds et al. teach an apparatus for determining amounts and identities of substances within patterns of magnetic particles which are complexed with substances to be determined and are excited in an oscillating magnetic field. The magnetizations of the magnetic particles thereby are caused to oscillate at the excitation frequency to create their own fields. These fields are inductively coupled to at least one sensor such

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as sensing coils fabricated in a gradiometer configuration. The output signals of the sensing coils are amplified and processed. (see abstract). The apparatus comprises:

- a vessel with an analyte to be detected or to be quantified. (see figure 3, refs 11 and 12).
- at least one magnetic field generator for subjecting the analytes to an alternating (AC) magnetic field. (see col. 1, lines 20-25; figure 3, ref. 35, col. 4, lines 41-42).
- at least a magnetic field sensor for measuring a response magnetic field of the magnetic particles. (see col. 4, lines 43-44; figure 3, ref. 41).
- at least one phase sensitive detector (figure 3, ref. 62).

Regarding the oscillator, Simmonds teaches that the phase sensitive detector is a phase-locking device. (see col. 10, lines 7-9). Phase-locking device has an oscillator.

However, Simmonds fails to teach the device includes at least one oscillator for producing frequencies of alternating magnetic fields.

Kang teaches a magnetic permeability detector comprises an AC magnetic field generator for receiving the alternating current voltage of the specific frequency bandwidth generated from an oscillator to form a magnetic field, and a magnetic sensor. (see [029]).

Since it is known in the art that an oscillator is necessary for producing frequencies of alternating magnetic fields as taught by Kang and Simmonds also teaches the magnetic field generates an AC magnetic field, it would have been obvious to one of ordinary skill in the art to use an oscillator in the device of Simmonds to

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produce frequencies of alternating magnetic fields. One of ordinary skill in the art would have a reasonable expectation of success for combining these teachings because both teach using a device having an magnetic field generator and a sensor for detection of magnetic particles possibly coated with a biological substance.

For claims 23-27, the magnetic field sensor is configured as a differential field sensor, comprising sensing coils, of the same construction type, which are connected in series opposition creating a gradiometer configuration. (see col. 8, lines 53-49). The container/vessel containing the analyte is in contact with only one of the two partial coils. (see col. 9, lines 16-38).

Claims 13-16, 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simmonds et al. in view of Kang as applied to claim 12 above, and further in view of Damgaard et al. (US 6,005,443).

Simmonds and Kang have been discussed above.

However, they fail to teach the device comprises at least one frequency divider or one frequency multiplier.

For claims 13 and 22, Damgaard discusses conventional standard phase locked loop circuit having an input frequency which is divided by a divider, wherein the divided input frequency by a value of N. The output of the divider is then input into a phase detector. The phase detector outputs a voltage that is proportional to a phase difference between two input frequencies. This phase detector output voltage is then input into a loop filter. The output of the loop filter adjusts the voltage-controlled oscillator (VCO)

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and determines the output frequency of the VCO. The output frequency of the VCO is then fed back into the phase detector via a feed back loop. (see col. 1, line 1-col. 2, line 20). Damgaard also teaches using a frequency multiplier which multiplies the output frequency of the VCO. (see col. 2, line 65-col. 3, line 2). The purpose of the frequency divider or frequency multiplier is to generate two different output frequency ranges from only one VCO. (see col. 2, lines 54-59). The two different frequency ranges are adjusted and fed back into the phase detector via the feed back loop and thus the signal is tuned.

Since Simmonds teaches using a phase-locked device/circuit and Damgaard teaches that it is conventional that a phase-locked loop circuit has a frequency multiplier or a frequency divider, it would have been obvious to one of ordinary skill in the art to incorporate the phase-locked detector as discussed by Damgaard in the device of Simmonds modified by Kang to generate two different output frequency ranges from only one VCO. (see Damgaard col. 2, lines 54-59). The two different frequency ranges are adjusted and fed back into the phase detector via the feed back loop and thus the signal is tuned. One of ordinary skill in the art would have a reasonable expectation of success in combining these teachings because they both teach using phase-locked loop detectors.

Regarding claims 14-16 and 18, since these claims recite functional limitations of a frequency divider and Damgaard teaches the same frequency divider, such divider in Damgaard should be able to perform these functional limitations recited in claims 14-18.

Regarding claim 19, Damgaard teaches that the divided frequency is stored in the phase sensitive detector. (see col. 1, line 1-col. 2, line 20).

Regarding claim 20, Damgaard and Simmonds fail to teach multiple phase sensitive detector and frequency divider. However, one of ordinary skill in the art would find it obvious to produce multiple phase sensitive detector or frequency divider since Damgaard teaches how to produce one single phase sensitive detector or frequency divider.

Regarding claim 21, Since Kang teaches the AC magnetic field generator receives the alternating current voltage of the specific frequency bandwidth generated from an oscillator (see [029]) and Damgaard teaches that the frequency output from the divider is input into an oscillator (VCO), it is understood that the frequencies of the frequency divider control the magnetic field generator.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pensee T. Do whose telephone number is 571-272-0819. The examiner can normally be reached on Monday-Friday, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Shibuya can be reached on 571-272-0806. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Pensee T. Do/

Examiner, Art Unit 1641

/Jacob Cheu/

Primary Examiner, Art Unit 1641